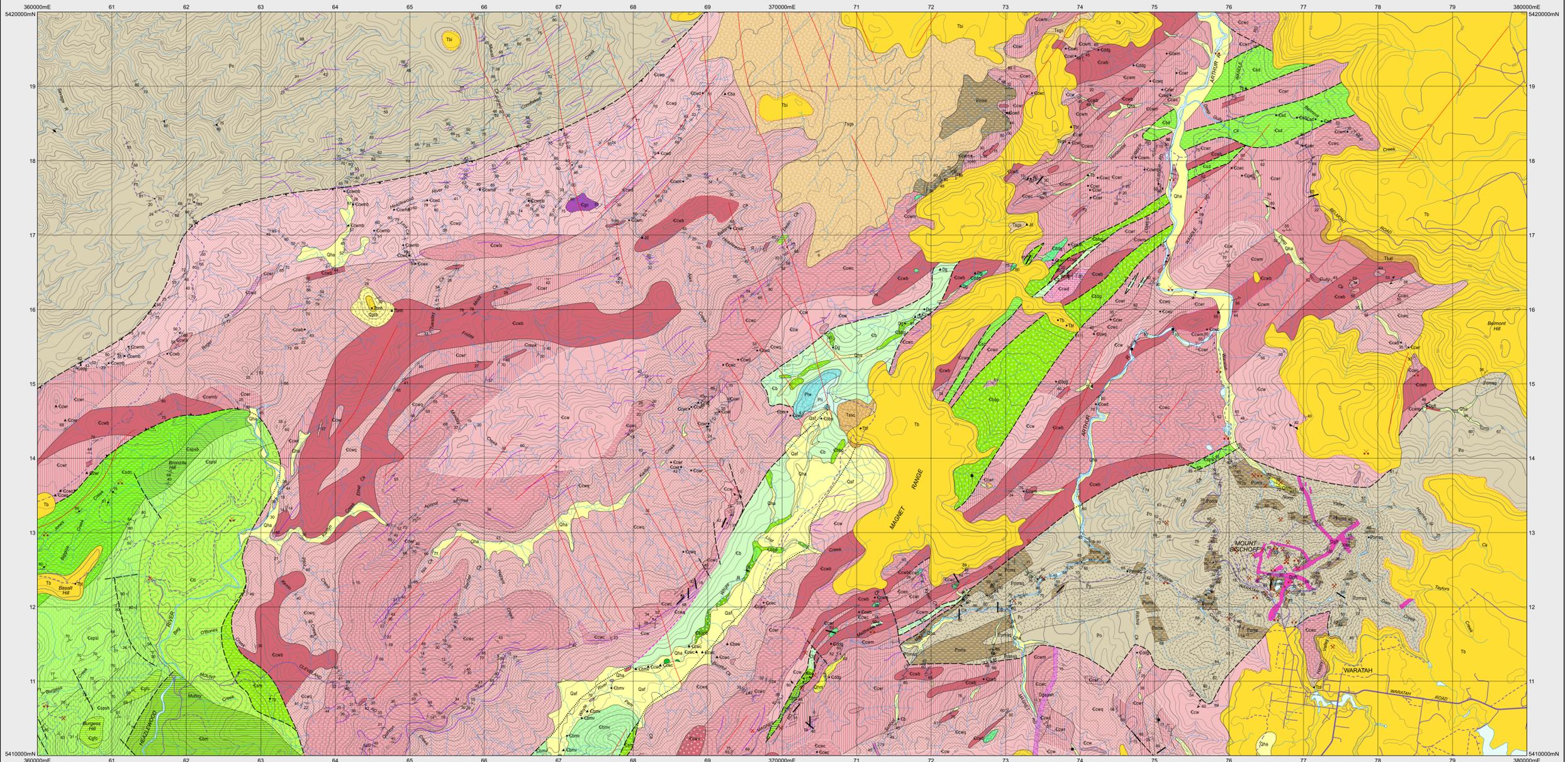
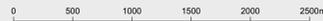


WARATAH

Scale 1:25 000



PERIOD	UNIT	DESCRIPTION
CENOZOIC	Qhm	Mine tailings and man-disturbed ground (Qhm).
	Qha	Stream alluvium, swamp and marsh deposits (Qha).
	Qaf	Alluvial fan deposits (Qaf).
NEOGENE	Qab	Basalt tuffs (Qab).
	Tb	Basalt (Tb); basalt inferred from air photographs and/or geophysical data (Tb); olivine tholeiite (Tb); transitional olivine basalt (Tb); and nepheline basalt (Tb) indicated.
	Tba	Agglomerate and tuff (Tba).
PALEOGENE	Tgs	Interbedded siliceous gravel, quartz sand and clay (Tgs).
	Tsc	Sand, silt and conglomerate (interlayered with basalt) (Tsc).
	Tbc	Dolomite boulders in a light brown clayey gravel matrix (Tbc).
CARBONIFEROUS	Pli	Grey poorly-bedded siltstone, mudstone and fine-grained sandstone, locally micaceous or pyritic with marine fossils near the top (correlate of Inge Siltstone) (Pli).
	Pw	Interbedded diamictite (including siltite), pebbly mudstone and laminated mudstone (pyritic), with minor conglomerate and sandstone (correlate of Wynyard Tillite) (Pw).
PALEOZOIC	Ccw	Mafic volcanoclastic sandstone-siltstone, mudstone-chert, minor carbonate sequences with intercalated tholeiitic basalt flows. Considered allochthonous (Ccw). Micaceous quartzite (lithoclastite with interbedded siltstone, mudstone, and minor mafic tuff (including Crescent Spur Sandstone) (Ccw).
	Ccw	Interbedded grey, brown and maroon chert, shale and argillite (Ccw).
	Ccw	Volcanoclastic lithoclastite with interbedded siltstone, mudstone and minor mafic tuff (Ccw); dominantly basaltic lithic sandstone ± dolerite spores (Ccw).
	Ccw	Red, maroon and brown argillaceous siltstone and mudstone (Ccw).
	Ccw	Interbedded fine-grained grey dolomite and chert, generally strongly to variably silicified (Ccw).
	Ccw	Coarse-grained massive mafic breccia, derived dominantly from tholeiitic basalt (Ccw).
	Ccw	Fine- to coarse-grained, aphytic to plagioclase-crociopyroxene-phyric tholeiitic basalt, with locally developed foliation and minor intercalated tuff (Ccw). (Ccw includes correlative of Deep Creek Volcanics).
	Ccw	Well-sorted quartz sandstone (Ccw).
	Ccw	Pyritic diamictite with chert clasts at 365900mE 5416610mN (Ccw).
	Ccw	Sequence of interbedded phyllite, phyllitic mudstone and siltstone, basaltic lithoclastite and dolomite in the upper Hazwood River area (Ccw).

PERIOD	UNIT	DESCRIPTION
EARLY CAMBRIAN	Cmrv	Undifferentiated mafic and ultramafic rocks (Cm). Coarse-grained mafic volcanoclastic, derived dominantly from low-titanium tholeiitic lavas (Cmrv).
	Ccm	Fine- to coarse-grained, massive to argillaceous, locally pillowed flows of mafic to granitic and fine-grained plagioclase-phyric basalt (low titanium) (Ccm). Interbedded blocks, agglomerates and minor sedimentary rocks. Interstitial primary quartz commonly present; locally grades to granophyre (Ccm).
	Ccb	Fine- to coarse-grained, commonly vesicular and locally pillowed or flow-banded boninitic lava (high magnesium andesite and basalt), interbedded with breccia and agglomerate. Usually porphyritic with pseudomorph phenocrysts of clinopyroxene, orthopyroxene and chromite. Typically deeply weathered and/or silicified (Ccb).
MESOPROTEROZOIC	Poms	Dominantly greywacke and pelitic siltstone/mudstone (Poms).
	Poms	Dominantly massive quartz sandstone with rare, thinly bedded to stratified and ripple-laminated sandstone and minor greywacke, pelitic siltstone and mudstone (Poms).
	Poms	Dolerite and minor doleritic breccia interbedded with quartz sandstone and/or pelitic siltstone (Poms). (Poms, Poms1, Poms2 possible correlate of upper Oonah Formation).
DEVONIAN	Po	Dominantly quartzite/siltstone (Po - Oonah Formation).

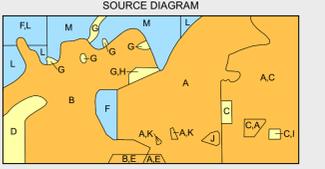
INTRUSIVE ROCKS

Jd	Dolerite; float boulders at 368115mE 5416945mN and 373274mE 5417148mN (Jd).
Dgf	Quartz-feldspar porphyry (Dgf).
Dgt	Dykes, sills and irregular bodies of quartz-feldspar porphyry, commonly altered to soapstone + muscovite + sulphide + carbonate + calcite-bearing quartz porphyry (Bischoff porphyries) (Dgt).
Dgash	Monzogranite, consisting of quartz, K-feldspar, plagioclase, biotite and minor hornblende (silicified dyke related to the Wombat Flat Granite) (Dgash).
Dg	Fine-grained quartz-feldspar-biotite-titanite granite, similar to the Waratah Granite, occurring as boulders (Fm) in creek beds near 371634mE 5415890mN and 372442mE 5416282mN (Dg).
Cdgb	Dolerite and microgabbro equigranular interlocking crystal framework of feldspar, biotite, pyroxene and abundant opaque phases (Cdgb).
Csw	Massive, variably serpentinized whiteite and plagioclase (hydrogrossular) whiteite (Csw).
Csw	Fine- to coarse-grained gabbro with interlocking crystal framework of large hornblende feldspar leucopyroxene and replaced pyroxene. Geochemically similar to low titanium tholeiite (Csw).
Cgp	Coarse- to very coarse-grained gabbro (Cgp).

Cxt	Massive, fine- to medium-grained tonalite and related rocks; modally and compositionally highly variable but commonly consisting of plagioclase, quartz, crystallised clinopyroxene ± orthopyroxene and Fe-Ti oxides with secondary actinolite, chlorite ± epidote + hydrogrossular. Dated at 513.8 ± 8 Ma (LFP on zircon, Black et al. 1997) (Hazwood Tonalite) (Cxt).
Cspn	Well-layered, subvolcanic to orthomagmatic sequence of harzburgite and plagioclase harzburgite, subordinate serpentinized dunite, plagioclase dunite, troctolite and orthopyroxene; and minor websterite, plagioclase orthopyroxene and anorthosite, with cross-cutting gabbroite and anorthosite dykes (Brassy Hill Harzburgite) (Cspn).
Cspab	Strongly serpentinized, layered mesocumulate to stromatolite sequence of plagioclase harzburgite, plagioclase dunite, plagioclase harzburgite and troctolite with minor anorthosite and cross-cutting plagioclase pyroxenite, gabbroite and anorthosite dykes (upper tholeiitic member of Purcell Plain Ultramafic) (Cspab).
Cspab	Strongly deformed, undulose sequence of dominantly massive orthopyroxene and olivine orthopyroxene, with rare thin layered zones containing harzburgite (Bronze Hill Orthopyroxene) (Cspab).
Cspab	Strongly deformed, undulose sequence of massive, variably serpentinized dunite with subordinate thin (10cm-1m) layers of harzburgite and orthopyroxene (Nineteen Mile Creek Dunite) (Cspab).
Csp	Serpentinized interlayered dunite and minor orthopyroxene (includes LDH succession) (Csp).
Csp	Serpentinized interlayered orthopyroxene, dunite and pyroxene-bearing dunite (includes LPD succession) (Csp).
Csm	Massive serpentine (Csm).
Cspw	Serpentinized melange (Cspw).

Geological contact	Geological contact - inferred	Geological contact - inferred from magnetic data	Geological contact - inferred from radiometric data	Geological contact - inferred from digital terrain model	Limit of mapping of sub-unit within undifferentiated rock unit	Limit of detailed mapping
Fault	Fault - concealed	Fault - inferred from radiometric data	Thrust fault (teeth on upper plate)	Lineament - visible in magnetic data	Lineament - visible in digital terrain model	Magnetic gradient or lineament (direction towards lower values indicated)
Strike and dip of bedding - right way up; overturned; facing unknown; vertical; vertical, facing indicated by simple 'ic'	Strike and dip of bedding facing unknown, derived from remote sensing data including LIDAR	Strike and dip of cleavage - dipping, vertical	Strike and dip of penetrative cleavage; vertical	Strike and dip of cleavage, relative local age S ₁ ; dipping, vertical; S ₂ - dipping, vertical	Strike and dip of crenulation cleavage	Strike and dip of cleavage, relative local age S ₂ ; S ₃
Strike and dip of cleavage of unspecified type and relative age, parallel to bedding, facing unknown	Strike and dip of cleavage of unspecified type and relative age, with dip, vertical	Trend and plunge of minor fold hinge line, unspecified relative age; with dip and dip direction of axial surface	Trend and plunge of minor fold hinge line, unspecified relative age; vergence sinistral	Trend and plunge of hinge line of minor fold, unspecified relative age; antiform; synform	Trend and plunge of minor fold hinge line, relative local age F ₁	Trend and plunge of minor fold hinge line, relative local age F ₂
Strike and dip of dominant joint set; vertical	Sense of lateral offset on wrench or oblique-slip faults: sinistral and schistose in granitic rocks	Strike and dip of primary igneous banding or play alignment, and schistose in granitic rocks	Strike and dip of metamorphic foliation other than cleavage; dipping, vertical	Dip of geological contact of unspecified type	Field station for adjacent readings on the map	Notable small outcrop with rock unit indicated
Notable small float or lag occurrence with rock unit indicated	Mineral deposit location - hardrock	Mineral deposit location - alluvial/tailings	Construction material/industrial mineral/gemstone location			

Strike and dip of bedding - right way up; overturned; facing unknown; vertical; vertical, facing indicated by simple 'ic'	Strike and dip of bedding facing unknown, derived from remote sensing data including LIDAR	Strike and dip of cleavage - dipping, vertical	Strike and dip of penetrative cleavage; vertical	Strike and dip of cleavage, relative local age S ₁ ; dipping, vertical; S ₂ - dipping, vertical	Strike and dip of crenulation cleavage	Strike and dip of cleavage, relative local age S ₂ ; S ₃
Strike and dip of cleavage of unspecified type and relative age, parallel to bedding, facing unknown	Strike and dip of cleavage of unspecified type and relative age, with dip, vertical	Trend and plunge of minor fold hinge line, unspecified relative age; with dip and dip direction of axial surface	Trend and plunge of minor fold hinge line, unspecified relative age; vergence sinistral	Trend and plunge of hinge line of minor fold, unspecified relative age; antiform; synform	Trend and plunge of minor fold hinge line, relative local age F ₁	Trend and plunge of minor fold hinge line, relative local age F ₂
Strike and dip of dominant joint set; vertical	Sense of lateral offset on wrench or oblique-slip faults: sinistral and schistose in granitic rocks	Strike and dip of primary igneous banding or play alignment, and schistose in granitic rocks	Strike and dip of metamorphic foliation other than cleavage; dipping, vertical	Dip of geological contact of unspecified type	Field station for adjacent readings on the map	Notable small outcrop with rock unit indicated
Notable small float or lag occurrence with rock unit indicated	Mineral deposit location - hardrock	Mineral deposit location - alluvial/tailings	Construction material/industrial mineral/gemstone location			



- Highly detailed (eg. more detailed than 1:25 000 scale mapping).
- Detailed systematic (eg. 1:25 000 map or equivalent detail).
- Regional systematic (eg. 1:50 000, 1:63 360 map or equivalent detail).
- Regional mapping less detailed than 1:63 360 map or equivalent (all other scales).
- Reconnaissance mapping with sparse ground traverses.
- Remote sensing and/or geophysical interpretation with limited or no ground information.

Compiled by G.V. Cumming, B.Sc.(Hons) and J.L. Everard, B.Sc.(Hons) 2016 from the following sources (see source diagram):

A. G.V. Cumming. Field mapping 2013-2016.

B. J.L. Everard. Field mapping 2013-2016.

C. BAILLIE, P.W., WILLIAMS, P.R., SEYMOUR, D.B., LENNOX, P.G. & GREEN, G.R. 1986. Geological Atlas 1:50 000 Series, Sheet 36 (01/1N), St. Valentines, Tasmania Department of Mines.

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L. G.V. Cumming and J.L. Everard. Geophysical and airphoto interpretation (including LIDAR).

REFERENCE THIS MAP AS:

CUMMING, G.V. and EVERARD, J.L. (compilers) 2016. Digital Geological Atlas 1:25 000 Scale Series, Sheet 3641 Waratah, Mineral Resources Tasmania.

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Website: www.mrt.tas.gov.au
GD494 - MGA Zone 55. Contour Interval: 20 metres.



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